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Ventilation device for a motor vehicle window pane

The present invention relates to a ventilation device usable for demisting or defrosting a glass window pane of a motor vehicle.

More specifically, the invention relates to a ventilation device for the inside of the glass pane of a window of a door or side of a motor vehicle in which, immediately below the window, the door or side is provided with an internal trim panel, the ventilation device comprising

a substantially tubular air channel which extends along the glass pane in proximity to the lower edge of the window, and which is provided with an air outflow aperture facing the glass pane;

said aperture having a lower edge coupled in a sealed manner to the glass pane, and an upper edge coupled to the glass pane in such a way as to allow air to flow from the air channel towards the glass pane.

The invention aims to provide an improved ventilation device of the type defined above.

This and other aims are achieved according to the invention with a ventilation device having the characteristics defined in claim 1, or a ventilation device of the type defined previously, characterised in that said air channel is formed integrally in the upper end portion of the internal trim panel.

Further characteristics and advantages of the present invention will become clear from the following detailed description, provided with reference to the appended drawings, in which:

Figure 1 is a side view of a motor vehicle;

Figure 2 is a sectional view, substantially along the line II-II in Figure 1; and

Figures 3 and 4 are partial perspective views which show two different embodiments of an internal trim panel incorporating a ventilation device according to the present invention.

Figure 1 shows a motor vehicle indicated as a whole by A. In the non-limiting example shown in Figure 1, the motor vehicle A is a motor car provided with two side doors D, only one of which is visible.

Each side door D comprises a lower side portion B and an upper window W.

In a manner known per se, the lower portion B of each side door D is provided on the inside with an internal trim panel, indicated by 1 in Figure 2. The trim panel is made, for example, of a rigid plastics material.

Each window W, in a manner known per se, comprises a glass pane indicated by 2 in Figures 1 and 2.

In the present description, the term "glass pane" means in general a pane of transparent material, not necessarily consisting of glass, but which could for example be made of a transparent plastics material.

As shown in Figure 2, the upper end portion of the internal trim panel 1 has a cross-section substantially in the form of a Y-shape bent back towards the glass pane 2, with an upper limb 1a and a lower limb 1b between which an air channel 3 is defined. The air channel 3 is substantially tubular in shape and extends along the glass pane 2 in proximity to the lower edge of the window W. The air channel is provided for an air

outflow aperture 4 facing the glass pane 2. The aperture 4 has a lower edge 4a and an upper edge 4b.

The lower edge 4a of the air outflow aperture 4 is coupled in a sealed manner to the glass pane 2. In the embodiment shown in Figure 2, the lower limb 1b of the upper end portion of the trim panel is provided with a sealing lip 5, which extends from the aforesaid lower edge 4a and which presses resiliently against the glass pane 2.

The sealing lip 5 may be made of an elastomeric material, possibly flocked on the surface.

The upper edge 4b of the air outflow aperture 4 of the channel 3 is coupled to the glass pane 2 in such a way as to allow air to flow from the channel 3 towards the glass pane 2.

In the embodiment shown in Figure 2, the edge of the upper limb 1a of the internal trim panel 1 extends at a predetermined distance d from the glass pane 2.

As shown in Figure 2, said upper edge 4b may conveniently be provided (in a manner known per se) with a plurality of flocked bristles 6 which form a sort of brush-like barrier, permeable to air, which presses against the inner surface of the glass pane 2.

The air channel 3 is intended to be connected in a manner known per se to the heating/air-conditioning system of the motor vehicle A, in such a way as to selectively receive therefrom a warm or cold flow of air. Part of the air flow leaves the air channel 3 and flows along the inner side of the glass pane 2. This makes it possible to produce a demisting or defrosting effect.

Said air flow may also serve to increase the comfort of the occupants of the passenger compartment.

In an alternative embodiment, not shown in the drawings, the edge of the upper limb 1a of the end portion of the trim panel 1 has a lip composed of a strip of fabric which extends towards and against the glass pane 2, forming an air-permeable barrier between the air channel 3 and the inside of the glass pane.

As a further alternative, in another embodiment of the present invention the edge portion of the upper limb 1a of the internal trim panel 1 is provided with an arrangement of longitudinally spaced notches, between adjacent pairs of which are defined corresponding edge portions projecting in the direction of the glass pane.

A first and a second embodiment of this concept are shown respectively in Figures 3 and 4.

In the embodiment shown in Figure 3, the aforesaid notches, indicated by 7, are produced directly in the edge of the upper limb 1a of the internal trim panel 1, and between them define protruding edge portions 8 which are integral with the trim panel 1.

In the embodiment shown in Figure 4, the aforesaid notches 7 and the protruding edge portions 8 are formed in a resilient lip member 9 provided at the end of the upper limb 1a of the trim panel 1.

The air channel 3 may have a cross-section that is substantially constant over its length or a cross-section which increases with the distance from its end close to the fascia.

With the principle of the invention remaining unchanged, the embodiments and details of production may of course be widely varied with respect to what has been described and illustrated purely by way of non-limiting example, without thereby departing from the scope of the invention as defined in the appended claims.

CLAIMS

1. A ventilation device for the inside of the glass pane (2) of a window (W) of a door or side (D) of a motor vehicle, wherein, immediately below the window (W), the door or side (D) is provided with an internal trim panel (1), the ventilation device comprising

a substantially tubular air channel (3) which extends along the glass pane (2) in proximity to the lower edge of the window (W), and which is provided with an air outflow aperture (4) facing the glass pane (2);

said aperture (4) having a lower edge (4a) coupled in sealed manner to the glass pane (2), and an upper edge (4b) coupled to the glass pane (2) in such a way as to allow air to flow from the channel (3) towards the glass pane (2);

the ventilation device being characterised in that said air channel (3) is formed integrally in the upper end portion of said internal trim panel (1).

2. A ventilation device according to claim 1, wherein said upper end portion of the internal trim panel (1) has a cross-section substantially in the form of a Y-shape curved towards the glass pane (2), having an upper limb (1a) and a lower limb (1b) between which said air channel (3) is defined.

3. A ventilation device according to claim 2, wherein the lower limb (1b) of said end portion of the internal trim panel (1) is provided with a sealing lip (5) which presses resiliently against the glass pane (2).

4. A ventilation device according to claim 2, wherein the edge portion of the limb (1a) of said end portion of the internal trim panel (1) extends at a distance (d) from the glass pane (2).

5. A ventilation device according to claim 4, wherein the edge portion of the upper limb (1a) of said end portion of the internal trim panel (1) is provided with a distribution of flocked bristles (6) which are directed towards the glass pane (2) and which form an air-permeable barrier between said air channel (3) and the inside of the glass pane (2).

6. A ventilation device according to claim 2, wherein the edge portion of the upper limb (1a) of said end portion of the internal trim panel (1) has a lip formed by a strip of fabric which extends towards and against the glass pane (2) and which forms an air-permeable barrier between said air channel (3) and the inside of the glass pane (2).

7. A ventilation device according to claim 2, wherein the edge portion of the upper limb (1a) of said end portion of the internal trim panel (1) is provided with an arrangement of longitudinally spaced notches (7), between adjacent pairs of which are defined corresponding edge portions (8) projecting in the direction of the glass pane (2) so that said notches (7) define outflow apertures towards the glass pane for the air which flows, in operation, in said air channel (3).

8. A ventilation device according to claim 7, wherein said notches (7) are produced directly in the edge (1a) of the trim panel (1).

9. A ventilation device according to claim 7, wherein said notches (7) are produced in a resilient lip member (9) connected to the edge (1a) of the internal trim panel (1).

10. A ventilation device according to any one of the preceding claims, wherein the air channel (3) has a cross-section that is substantially constant over its length.

11. A ventilation device according to any one of claims 1-9, wherein the air channel (3) has a cross-section increasing with the distance from its end closest to the fascia.



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Fig. 1

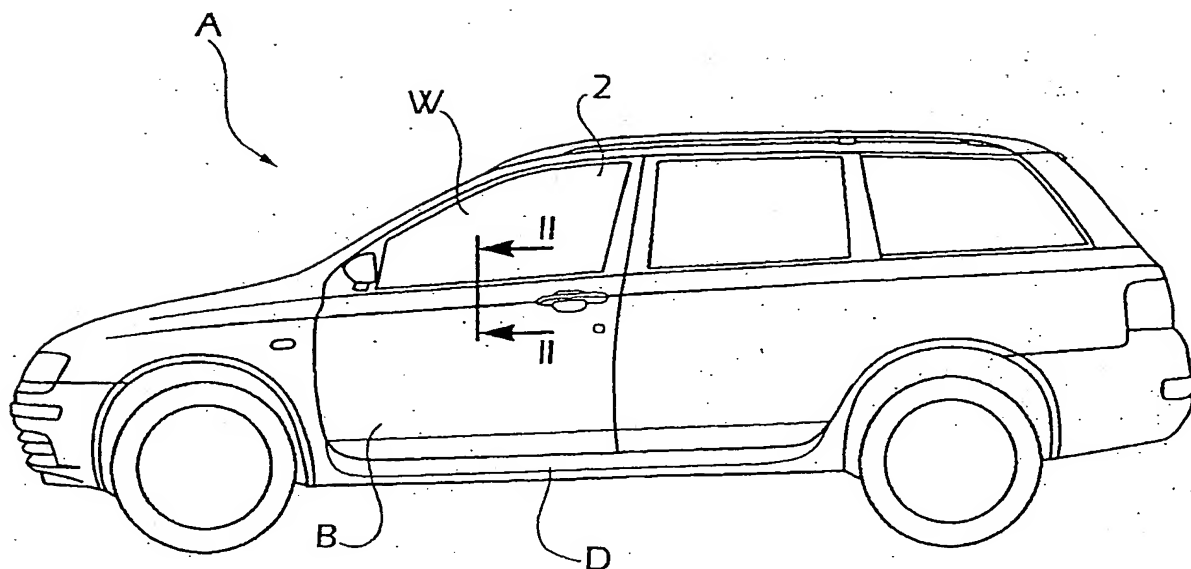
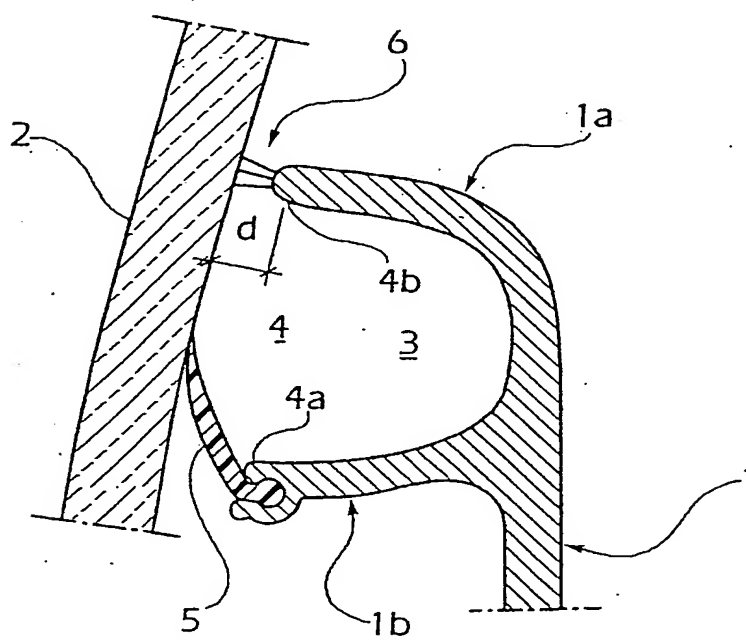


Fig. 2



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Fig. 3

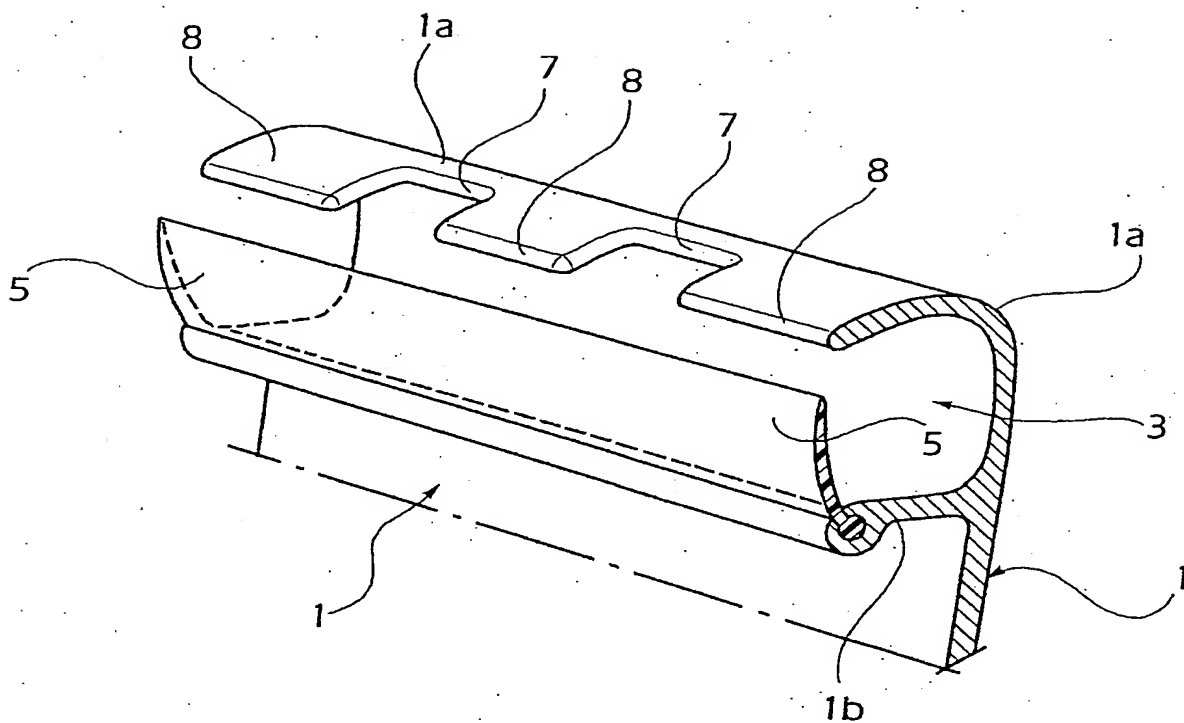
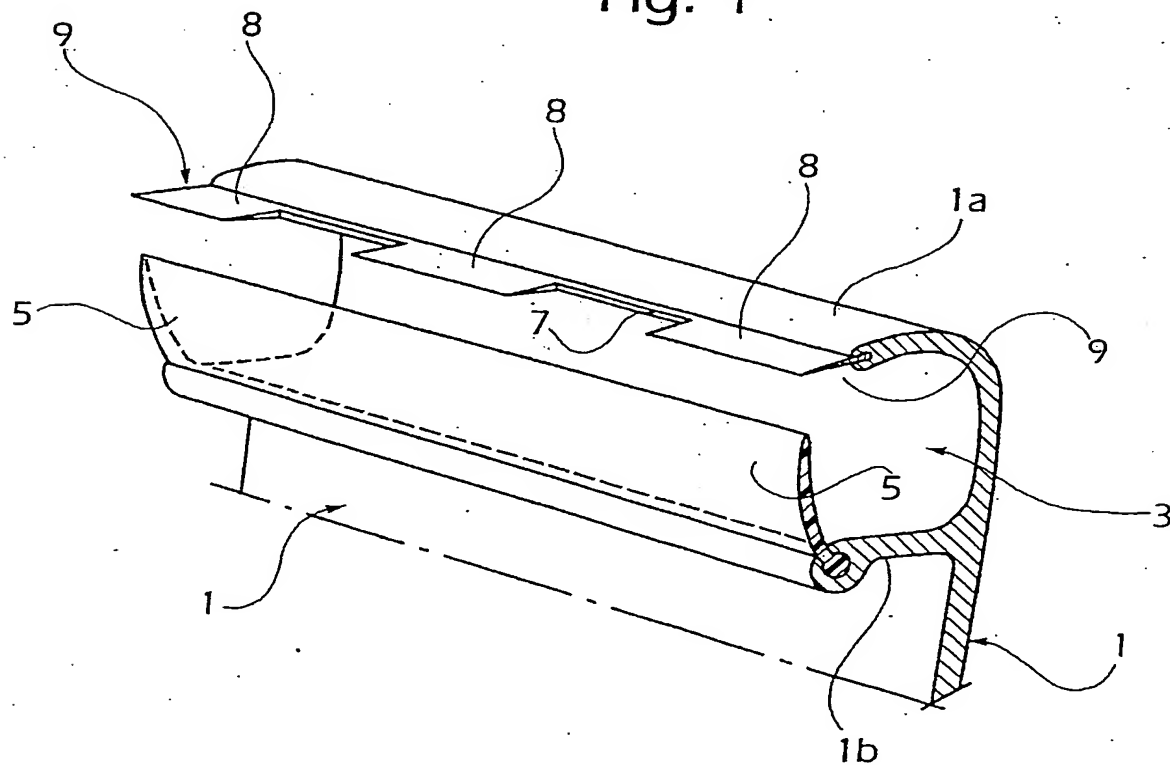


Fig. 4



## INTERNATIONAL SEARCH REPORT

International Application No

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## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B60H1/34 B60H1/24 B60J10/04 B60S1/54

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B60H B60J B60S

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A.	DE 30 17 974 A (STEYR DAIMLER PUCH AG) 26 November 1981 (1981-11-26) the whole document	1
A.	US 6 135 874 A (WEBER NORBERT) 24 October 2000 (2000-10-24) column 4, line 30 - line 63; figure 2	1
A	EP 0 992 410 A (BTR SEALING SYSTEMS FRANCE) 12 April 2000 (2000-04-12)	
A	US 2 677 155 A (WISE RALPH H) 4 May 1954 (1954-05-04)	

☐ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

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